LIVING GIANTS

by

MIRIAM WOOD
Raymond Foundation

Museum Stories, Number 175

March 5, 1949

Living Giants

When you read or hear that word "giant," what kind of a giant do you think of? A giant is something big, bigger than anything else of its kind. The biggest land animal, the elephant, is at least twenty feet long and weighs about six tons. Then there are other giants, like the Goliath beetle, giant of all the beetles. It is only four inches long, but that is four hundred times bigger than the smallest beetle. So, you see, some giants are bigger than you are and some are smaller. Then there are giants that are told about in fairy stories, such as "Jack, the Giant Killer," and those giants are only imaginary. But there are other giants that are real ones, like the dinosaurs, those great lizards that lived from sixty to one hundred and fifty million years ago. Once upon a time they were really alive, and no doubt some of them were the largest of all the animals living then. This prehistoric dinosaur was about eighty feet long and weighed about forty tons.

But there are giants today even bigger than the prehistoric dinosaur, and they are far more interesting than these fossil giants or stories about mythical giants. Do you know that the largest living things today are trees? They are the redwoods and big trees (sequoias). One big tree, called "General Sherman," is probably the world's largest tree. It is located in Sequoia National Park and is 272.4 feet high and 36 feet in diameter at its base. The tallest tree is a redwood 364 feet high that is growing at Dyerville, California. A few of the giant eucalyptus trees of Australia rival the sequoias in height. Sequoias are very old. "General Sherman" is between

three and four thousand years old, while the biggest redwood is about twenty-two hundred years old. Sequoias are still living, still growing, and still the giants of all living things.

Being the biggest of all its kind does not neeessarily make anything the oldest or the strongest of its kind. For instanee, the leatherbaek turtle is the giant of all the sea turtles. It weighs about fifteen hundred pounds but it does not live so long as another smaller turtle, the giant land tortoise, whieh lives to be about two hundred and twenty-five years old. Think of it! An old land tortoise living now may have been born before George Washington! This tortoise has a longer life than any other animal living today.

Some giants grow slowly. Redwood trees take at least one hundred years to grow two hundred feet in height, while another giant plant, the bamboo, grows as mueh as sixteen inches in one day and night. You ean almost see and hear the bamboo grow.

Do you know the giants of today? Can you name the biggest mammal, the biggest fish, the biggest snake, the biggest bird, the biggest lizard, the biggest turtle, the biggest grass? This list could go on and on beeause today there are many kinds of living things, and each kind has its own "biggest" that could be ealled its giant. The eight stories following this one will tell you more about some of these different kinds of giants.

This page is for your own notes and illustrations

THE REDWOOD TREES

by

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March 12, 1949
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The REDWOOD TREES

The redwoods and big trees of our western United States are the oldest and the largest of living things. Some of these trees are more than two thousand years old and exceed three hundred and fifty feet in height. They grow only in a few places now. Redwoods, *Sequoia sempervirens*, meaning evergreen sequoia, are found close to the Pacific Ocean in a strip about five hundred miles long and thirty miles wide, stretching northward from central California into Oregon. This is a rather low fog belt and redwoods seem to thrive in the moisture. Big trees, *Sequoia gigantea*, signifying giant sequoia, grow higher up in the mountains and are found only in a few isolated places farther east in California.

There are no other living sequoias in the world today. But at one time in the past the same kinds of trees were growing in Europe, Central Asia, and scattered throughout North America.

Those early redwoods were growing at the time of the last flying reptiles and dinosaurs, about sixty-five to eighty million years ago. They lived on through the years when mastodons, mammoths, and saber-toothed tigers roamed the earth. Then the great ice glacier probably destroyed all these enormous trees except the two small groups still growing in the western United States. The oldest of these trees living today were probably alive when the pyramids of Egypt were built and before the time of Christ.

What kind of tree is this great redwood? It is an evergreen tree, with flat, needle-like leaves and small

cones. The slender leaves remain green for about two years before they turn brown, and they may stay on the tree two more years before they drop. They are constantly falling, but at certain times of the year more leaves are shed. However, the tree is never entirely without leaves, for it is an evergreen.

The great trunks, as much as twenty feet in diameter, are covered with rough, reddish bark and often have burls that look like huge warts. These round trunks stretch up straight and tall for many feet before the branches thrust out to the sunshine above. With rays of sunshine slanting between them, the tall, bare trunks topped with small crowns of branches look like magnificent colonades.

Redwoods show great vitality. They can sprout from the seeds, roots, burls, or trunks. Few insects and diseases attack the trees, and the wood is slow to ignite because of the little resinous matter it contains. However, few sequoias have been known to die a natural death of old age. Most of them have been destroyed by glacier, wind, or severe forest fire or cut down for lumber. Although these trees have been able to live for many years, they can grow only in certain altitudes with the right temperature and moisture.

The common name, redwood, refers to the color of the wood. This wood is often used for building purposes, especially the highly ornamental wood of the burl. As this beautiful wood becomes better known and is more in demand, there is always the danger that too many trees will be felled for commercial purposes and that seedlings will not be started or allowed to replace the cut trees, so that the few remaining stands of these great trees will eventually disappear. Many people have been interested in protecting the sequoias from further destruction and possible extinction. As a result, state and national parks have been established and private organizations formed.

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BLUE WHALES, LARGEST OF ALL ANIMALS

by

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Raymond Foundation

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March 19, 1949

Blue Whales, Largest of All Animals

"Thar she blows!" A spray of fine mist that looks like a geyser shoots into the air with a loud blast. The killer boat draws near. The man operating the harpoon cannon adjusts the sights, and all wait for the deadly weapon to find its target in the mighty blue whale, giant of all living creatures. Not only is the blue whale the largest living animal, but it is also the largest animal that has ever lived on this earth—larger than any prehistoric dinosaur.

This whale is amazing for other reasons than its size. Although fish-like in appearance and living only in water, it would drown like any land animal if it could not come up to the surface about every half hour to breathe. The so-called "spouting" that indicates the presence of a whale is not a spouting of water at all but the vapor that accompanies the exhaled breath of the whale. When the warm breath hits the cold air, the water vapor in the breath condenses and may rise twenty feet in the air.

Another amazing fact is that this huge mammal, which often reaches a length of one hundred feet and a weight of one hundred and fifty tons, eats only the tiniest of fishes and the crustaceans known as "krill," about one-fifteenth of an inch in length. Of course, the whale's stomach can hold more than a ton of these small creatures at a time. Old Blue Whale could be severely censured for bad eating manners, for it swims around with mouth wide open through masses of its food until its huge mouth is full. It cannot chew its food because it has no teeth, but with its tongue it pushes the water out through strips of sieve-like baleen or whalebone, thereby straining out the food. Naturally, the whale lives in the parts of the oceans where there is an abundance of whale food, particularly in Arctic and Antarctic waters.

The blue whale is also amazing beeause it grows so fast. It is about twenty-two feet long at birth. About seven months later, it is twice as long; and finally, when it reaches about two and one-half years of age, it is about eighty feet long. A frequent visitor to the Antaretie, if he eould reeognize the same whale, might very well say those familiar words, "My, how you have grown!"

Although its size is an identifying feature, another eharaeteristie of this whale is its bluish eolor with small gray patehes. Many times masses of tiny plants hang on the underside of the whale, giving it a yellowish sulphur eolor. For this reason the whalers eall it "sulphur bottom." The whale swims by moving its tail down and up, and it uses its paddle-like flippers for steering and balaneing.

The whale is hunted commereially for its valuable oil, meat, and bones. Long ago, a whaling expedition meant to the hardy whalers and their families a long, dangerous voyage with the possibility of no return. Today, with modern ships and equipment, whale-hunting is a matter of little risk. Modern whale-hunting is so effieient that the numbers of whales have decreased in all oeeans, and there are now international protective agreements to help conserve whales. So, remember, the elephant may be the largest land animal and the whale shark the largest fish, but they are mere pygmies beside the amazing sea mammal—the mighty blue whale.

This gives you an idea of the size of the blue whale because the man standing beside the giant animal is six feet tall.

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THE OSTRICH

by

JANE SHARPE
Raymond Foundation

CHICAGO
NATURAL HISTORY
MUSEUM
RESEARCH EDUCATION
FOUNDED
1893
BY MARSHALL FIELD

Museum Stories, Number 178

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The Ostrich

When we think of birds, wc usually think of wings and flying and often pieture the tiny humming bird poised in its baekward and forward flight or the mighty eagle swooping down through the elouds. One of the surprises of the animal world is that the largest, most powerful bird in the world today, the ostrich, does not fly. Somc of these birds weigh as mueh as three hundred pounds and stand eight feet tall. But the ostrieh has small wings, mueh too small to be of any use for flight, and so it must outrun its enemies rather than fly from them. Its legs are long and strong, and its kiek ean be deadly. Some ostriehes ean run faster than a horse.

Africa and Arabia are the native homes of thc ostrich. Ostriehes dig their ncsts in the sand or earth. The shallow hole may eontain from fiftecn to twenty eggs. An ostrieh egg is about eighteen timcs as large as a barnyard hen's egg, and each egg weighs about thrcc pounds. Ostrich eggs have a delicious flavor.

Ostriches are often found in family parties made up of a cock ostrich and five or six hens. The hatehing of the young is a family affair, and the parcnts are very fieree while guarding their eggs. A violcnt kick of their powerful legs proteets the nest if it is attacked.

The male sits on the eggs at night, perhaps beeause his plumage is a beautiful, glossy black and white that blends with the eoloring of the night. The female sits on the nest during the day, no doubt bccause her dull, gray-brown fcathers blend with the daytime baekground. She will never leave the eggs to be hatehed by the heat of the sun beeause the sun's strong rays would kill the chick inside. When the young hatch, they are about the size of a full-grown ehieken and are all thc same gray, mottlcd color. Howcver, as timc passes and the baby ostriehes beeome largcr, their eolors ehange to match those of their parents.

Ostriehes are soeiable birds. Very often they join company with bands of zebras and antelopes and roam together over the prairies and sandy deserts. This association gives them proteetion against their enemy, the lion. Ostriches have exeellent sight and ean see far over the heads of their four-footed eompanions, while zebras and antelopes have keen seent; so when a lion is scented or seen, all have a better ehanee of eseaping.

As you know, ostriches do not bury their heads in the sand in times of danger but instead kick or run away. It is when they are feeding on the grasses of the plains that they look as if they are hiding their heads, espeeially if seen from afar.

Domestieated ostriches are raised in many parts of the world on ostrieh farms. Some of these farms, where ostriches are raised for profit, are in Ameriea and Australia. Domestieated ostriehes supply most of the plumes that are used to beautify women's wardrobes. Clipping its plumes eauses the ostrich no more pain than you feel when you have your hair eut.

For food, the ostrieh eats grass, leaves, berries, and seeds. Small stones are a neeessary part of its diet beeause they aid in grinding up the food. The ostrieh is a eurious bird and very easily misled. It will eat almost anything that ean be swallowed, large or small, and this peeuliar habit eauses zookeepers no end of trouble. When you visited the zoo, you may have seen an ostrieh just after it had swallowed an apple or some bulky object. The big lump slowly moving down the bird's long neek is a strange sight. Ostriehes must think that anything they ean swallow is food, for in the zoo many die from eating too many handkerehiefs and nails.

This page is for your own notes and illustrations

THE RETICULATE PYTHON

by

LORAIN FARMER
Raymond Foundation

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April 2, 1949

The Reticulate Python

If you were to put your finger over the line that represents the equator on a world globe and then spin the globe with your other hand, eventually your finger would cover the islands of Borneo and Sumatra and the long pencil of land known as the Malay Peninsula. These faraway lands are the home of the largest snake in the world—the reticulate python. Pythons are to be found in almost every part of these regions: in the dense jungles and even in the cities, villages, and rubber plantations. In the tropical forests, brightly colored parakeets swoop from branch to branch and monkeys chatter a warning as leopards stalk their prey. Through the tangled web of leaves and vines, where a man must cut his way with a knife, this huge snake moves in search of food.

When an animal, such as a pig or small deer, comes close enough, the python quickly grasps it with its teeth, wraps several coils of its body around the victim, and squeezes it. This squeezing process is called constriction, and snakes that kill their prey in this way are called constrictors. People often have the idea that the python crushes the bones in the body of the animal it intends to eat. This is not so, since there is no need for the large snake to squeeze that hard. The python simply tightens its coils until the animal can no longer breathe and is suffocated.

To many people it seems miraculous that the python can swallow an animal that is so much larger around than it is, and they look at the huge snake as if it were unique among animals for this reason. But if they were to observe the snakes living right in their own area, they would see that even a small one, like the common water snake, can swallow a large frog, thus doing the same thing as the python only on a smaller scale. Most snakes are able to swallow animals larger around than they are because their lower jawbone can spread apart and their skin stretches almost like elastic. It takes about three or four days for a snake to digest a large animal, and during this period the snake is inactive.

The female reticulate python lays anywhere from fifty to one hundred tough, leathery eggs. Each one is about four inches long and oval in shape. As soon as the last one is laid, the female gathers them together by encircling them in the coils of her body. During the two months before the eggs hatch, the female remains in this position, protecting and incubating them. When the young snakes hatch, they are about two or two and one-half feet long. The female abandons them as soon as they hatch, for they are perfectly able to take care of themselves. The small pythons grow rapidly, and by the end of the fourth year they will probably be about twelve feet long. Some may finally reach a length of thirty feet, although the average is fifteen to twenty.

The word "reticulate" in the name of this python comes from the Latin word *reticulatus*, which means "network" and describes the snake's bright pattern. In temperament the reticulate python is sluggish, usually making little or no attempt to escape when captured. In Siam, these snakes often live near villages and towns, and once a python was killed in the palace of the King of Siam. It was found just to have made a meal of one of the royal Siamese cats, which was recognized by the bell still around its neck.

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WHALE SHARKS

by

LORAIN FARMER
Raymond Foundation

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April 9, 1949

Whale Sharks

When many people think of a shark, they picture a large, vicious, streamlined fish with long, sharp teeth and a desire to attaek and eat any living thing it sees. There have probably been more stories told about sharks than about any other group of fishes. Many of these tales are exaggerated, but it is true that the largest fish in the world is a shark. This giant of the fishes is ealled the whale shark because of its size, and the name is also appropriate on aceount of its method of feeding.

It seems strange that the whale shark, whieh sometimes reaehes a length of fifty feet and a weight of several tons, is the enemy of no largc animals. Although even a half-grown whale shark has a mouth four feet wide that would easily hold a man, this large shark eats only very small fishes and the minute plant and animal life found in the sea. Inside its mouth are many rows of tiny baekward-pointing teeth, eaeh about one-eighth of an inch long and numbering in the thousands.

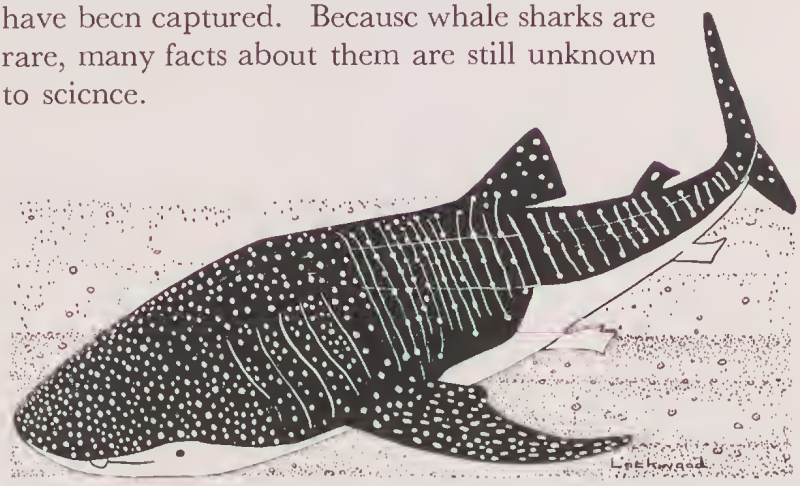
If you were to run your hand over the teeth of a whale shark, the sensation would be much like touching a rough file. The seientist who first described this shark ealled it *Rhineodon,* whieh means "file tooth." These teeth are not used for biting or tearing as are those of many sharks. The huge whale shark swims along near the surfaee of the water with its large mouth open. The water flows through its mouth and out of large gill slits on the side of its head. Between its mouth and the gill slits is a set of "gill rakers" espeeially constructed to aet as a sieve and strain out the small animals and plants that form thc food of the whale shark.

The whale shark is rather brightly marked with yellowish-white spots on a brown baekground, making a kind of eombined eheekerboard and polkadot pattern. Probably to one who is unfamiliar with the habits of this shark, the sight of the huge fish swimming in the

water would be frightening. However, there is little reason to be afraid of it, for unlike certain dangerous sharks, the whale shark has never been known intentionally to cause damage or loss of life. Occasionally a whale shark has been known to swim right up to a boat and drift around and around the vessel, apparently out of curiosity. This action may be dangerous to the shark, for there are some reports that several have been bumped by large boats and injured. Because of its inoffensive habits, the Cubans call the whale shark *pez dama*, which means "lady fish" or "gentle one."

Harpooning the whale shark is quite difficult, not because it is hard to come within range of one but because of its tough hide. Most sharks have an extremely strong skin, and the skin of a whale shark might be compared in quality to a hard rubber tire. Therefore, a harpoon unless thrown with much strength at exactly the correct angle will seldom penetrate this tough skin, and even buckshot may glance off, leaving the shark uninjured.

Whale sharks have been found in the warmer parts of almost all oceans but they are not seen very frequently, and during the one hundred and twenty years that they have been known and studied, only about one hundred have been captured. Because whale sharks are rare, many facts about them are still unknown to science.



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BAMBOO, THE GIANT GRASS

by

MARIE SVOBODA
Raymond Foundation

Museum Stories, Number 181

April 16, 1949

Bamboo, the Giant Grass

Did you know that if you lived in China, Japan, or Ceylon you could plant a certain kind of grass and from it obtain food, a house, a sailing boat, furniture, buckets, fishing poles, or almost anything you could use in everyday life? Even more astonishing is the fact that, if weather conditions were ideal and the amount of rainfall were sufficient, you could have all this in just about ninety days! Perhaps this sounds fantastic to you but, nevertheless, it is true. The giant of the grasses, bamboo, does all this and even more.

Bamboo is native to Asia, Africa, and North, Central, and South America. In Asia alone there are approximately five hundred different kinds of bamboo. Bamboo grows well anywhere in the temperate zone.

Bamboo stems, which grow from underground rootstocks, are hollow, like most other grass stems. The stems are conspicuously marked at intervals by nodes that divide the stems into

sections. If you were to cut a bamboo stem across at a node, you would find that at this place a woody partition closes the stem cavity. The branches, which grow at the very top of the plant, are numerous and sometimes spiny. Some bamboos bear flowers and seeds every year, while others bloom only once in every fifty or more years. The fruit of most bamboos is a grain, of others it is a nut, and in a few it resembles an apple.

Bamboo seems to be the most rapidly growing of plants. In Ceylon it has been observed to grow sixteen inches in one day and night. A single root may send up as many as one hundred stems, some of which may measure three feet around. These stems rise to fifty or one hundred or even one hundred and twenty feet high, forming almost impenetrable masses. Bamboos grow so fast that if roadways are not constantly cleared, they become overgrown in just about thirty days.

In Oriental countries the uses of bamboo are almost endless. All parts of the plant are used in one way or another. The young tender shoots are cut and served like asparagus, or they are eaten like candy or as a pickle relish. The grains of the bamboo are used as food by the Chinese and the Hindus.

The bamboo stem, however, has the greatest number of uses. Houses are often made entirely of it. Chopsticks, hairpins, fans, baskets, and even paper are made of bamboo. Stem joints serve as water buckets, pen holders, bottles, and cooking utensils. Some species of bamboo have such a hard outer covering that knives and swords with sharp cutting edges can be made from it.

Only two kinds of bamboo are native to the United States. These make up the canebrakes of the south. Bamboo seems to thrive best in the cotton states and in the western valleys of southern California. In this country bamboo is used mainly for fences, phonograph needles, and crates.

This page is for your own notes and illustrations

GIANT SQUIDS

by

JUNE BUCHWALD
Raymond Foundation

Museum Stories, Number 182

April 23, 1949

Giant Squids

"These are not fish, or animal, but demon—I speak of squid. . . . They rise only at night to lie as ghosts upon the waves. They spit poison which burns, and is black. They have mouths, sharp and vile, surrounded by ten arms, all covered with suckers. They know no size, but are huge and horrible."* So spoke Juan, an experienced South American deep-sea fisherman.

Sailors and fishermen the world over have told strange stories about giant squids, largest of the invertebrates (animals without backbones). It seems difficult to believe that fear, wonder, and confusion are expressed in describing an animal related to the lowly and harmless clam and snail, but exaggerated sea-monster stories are no more fascinating than the true facts.

You must understand, first of all, that because squids are deep-sea dwellers much about them remains a mystery—their greatest length, their color, food, and life-span, the depth at which they live, their young, and other details. Information is obtained by studying small squids and dead squids that are washed ashore.

The squid resembles nothing else! It has a head joined to a soft, rubbery body by a narrow neck that is covered with a coat-like mantle attached to the back. On each side of its head is an eye about the size of a dinner plate, an eye that impresses you as being keen, cold, and intelligent. The squid's foot is joined to its head, giving the animal its classification as a cephalopod (head-footed animal). Actually, it is a foot in name only; for in appearance it is divided into ten huge, twining, sucker-covered "arms" that can be thirty-five feet in length. Two longer "arms" shoot out to seize a victim and bring it back to be held by the eight shorter "arms." The prey is then torn apart by the squid's

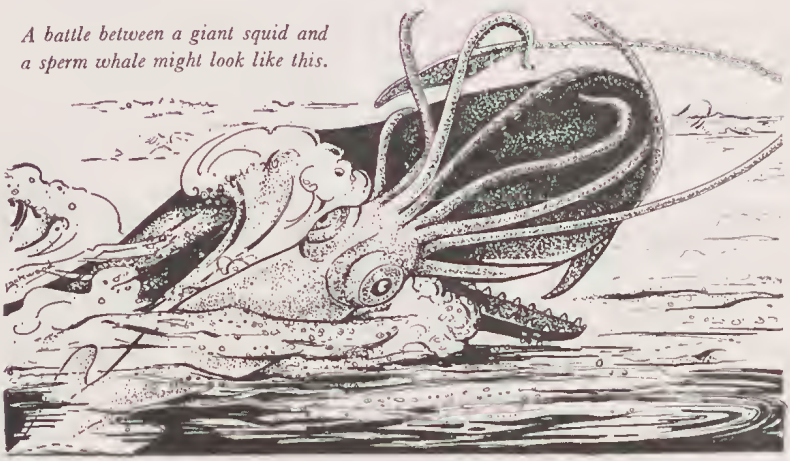
*Duncan, David D., "Fighting Giants of the Humboldt," *National Geographic Magazine*, vol. 79, p. 385.

beak-like mouth and often chopped up by its thin tongue, which is covered with hundreds of little hook-like teeth.

The squid has a most unusual method of traveling quickly. For speed, it does not swim, crawl, or walk but moves in a manner described as jet propulsion. Water is taken in through a slit-opening encircling the head and then forced out through an organ, under the head, called the siphon. If the movable siphon is facing forward when the stream of water shoots out, the squid, surprisingly, darts backward. If the siphon is turned slightly, the squid moves to the side; and when the siphon is bent backward, this animal shoots forward.

The siphon is also used to discharge an inky fluid that spreads in the water for a great distance. The black liquid aids both the squid and man. It is a protection for the squid, and it provides man with the source of sepia used in commerce and the arts.

Aside from man, the squid's greatest enemy is the sperm whale. Great and strong as it is, the squid seems to be no match for the whale with its large and heavy teeth. Scar marks made on the skin of whales by the squid's suckers and fragments of squids found in the stomachs of captured whales are evidences of battles between these two powerful creatures.



A battle between a giant squid and a sperm whale might look like this.

This page is for your own notes and illustrations

THE KOMODO LIZARD

by

JANE SHARPE

Raymond Foundation

Museum Stories, Number 183

April 30, 1949

The Komodo Lizard

Dragons have always been the monsters of fairyland and the villains of our fairy stories. Through the ages Chinese artists have pictured imaginary dragons with curling tail, flame-like breath, and long, sharp claws. These animals of Chinese myth were regarded as a kind of divinity. In fact, the dragon is the imperial emblem of China. It is interesting to know that the large lizards of the Lesser Sunda Islands in Malaysia are sometimes called the "Dragons of Komodo."

These giant lizards, however, do not spit fire, but they are awe inspiring. Many of them live on small Komodo Island, which lies east of Java and south of the equator. They look very much like our little forked-tongue lizards here in the Middle West, those tiny six-lined race-runners that are about eight inches long, but the size of Komodo lizards is mammoth in comparison. Old Komodo lizards may be ten feet long and weigh about two hundred and fifty pounds. These huge, ungainly animals are a reddish brown or almost black, and the younger ones are a lighter brown.

Each scale of the Komodo lizard is underlaid by a plate of bone that makes a fine coat of armor. Bone and scales act as a shield against enemies in case of attack. As this armored reptile advances, its tongue is kept constantly darting to investigate near-by objects—an impressive sight! But its coat of armor will not protect the lizard from bullets. The natives call the Komodo lizard "boeaja," which means "land crocodile."

This species of lizard is found only on a few islands in the East Indies. When your grandparents were children they had not heard about these peculiar creatures because it was not until 1912 that an expedition discovered these giant lizards and made them known to the civilized world. Even on those few faraway islands they live only in certain restricted areas where the

country is rough and alang-alang grasses and bushes spring up between the bare rocks with here and there a solitary lontar palm growing among the scattered trees. In the dry season this land looks very barren and forlorn, but wild pigs and deer are plentiful. These powerful lizards prey on small pigs and deer, but they sometimes vary their diet with bird and crocodile eggs.

In recent years, the great demand for lizard skin threatened Komodo lizards with extinction. Lizard skin, as you know, is used to make shoes, belts, bags, and various coverings. But now Komodo Island has been set aside as a wild-life preserve.

In captivity Komodo lizards become quite docile, but they show their great strength when they eat. The London Zoo once had a female lizard, named Sumbawa, that would carefully swallow a whole egg, shell and all, from a stout metal tablespoon. One time she bit through the heavy handle and ate the bowl of the spoon with the egg, which, as usual, was swallowed without breaking the shell. Sumbawa was fed about every five days on an alternate diet of twelve eggs and two pigeons or a moderate-sized chicken. Even with this picture of peacefulness, it should never be forgotten that the Komodo lizard is a wild creature.

This page is for your own notes and illustrations